Confirmatory Survey of Building T020
Concrete Blocks and Other Building Debris
Santa Susana Field Laboratory
Boeing - Rocketdyne
Ventura County, California

Prepared By
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Preparation Date: March 26, 1999

Reviewed by: Stephen Hou Date: 3/26/99

Introduction:

The concrete blocks and materials resulted from the sectioning of the walls and floors of the Rockwell International Hot Laboratory (RIHL) during demolition of the building. At the time of demolition, these blocks (244 decontaminated structural concrete sections s/n 519 - 763 and 20 steel shield door sections) were found to have radioactive contamination of several surfaces and subsequently decontaminated by Boeing-Rocketdyne. The purpose of this survey is to determine if the blocks may be released for unrestricted use as defined in DECON – 1 (Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use).

Reference Document:

1. Letter 99RC-740, with enclosures, from James Barnes to Roger Lupo, "Disposal of Rockwell International Hot Lab (RIHL) Wall Section Blocks", February 5, 1999.

Survey Personnel:

Roger Lupo and Xiao Song Yin of the Radiological Health Branch performed a survey on March 3, 1999.

Survey Instruments:

Manufacture & Model	S/N	Probe/detector	S/N	Calibration due date
Ludlum Micro R m-19	80435	Internal NaI 1x1 scint.	NA	5/1/99
Ludlum model 3	134076	44 – 2 NaI 1x1 scint.	PR137133	12/1/99
Ludlum model 18	105775	44 – 9 G-M pancake	PR110029	11/8/99
Ludlum model 2224	149367	43 – 89 100 cm^2 dual scint.	PR154122	9/26/99
Eberline ESP - 2	00406	44 – 9 G-M Pancake	PR043314	12/1/99
Eberline ESP - 2	00406	44 – 10 NaI 2x2 scint.	PR038045	12/1/99

Survey Report:

The equipment listed in the above table was function checked and background measurements were taken. Background measurements are listed in Table 1. A general survey with a NaI detector sensitive to gamma photons of all the blocks and a GM pancake (beta/gamma) survey of a selected number of the blocks were performed by Radiologic Health Branch personal. The general gamma survey measurments ranged between 2500 cpm and 3000 cpm. The blocks selected at random for survey by G-M pancake had measurments ranging between 60 and 90 cpm for the steel bolcks and 30 to 140 cpm for the concrete blocks. Direct measurements and swipe samples were taken at the selected blocks. The swipe samples were sent to the Sanitation and Radiation Laboratory Branch (SRLB) in Berkeley. The survey results are listed in Table 2 and the SRLB analysis results of the swipe sample are listed in Table 3.

Table 1: Background Measurements

Measurements made at Building T487

Meter	Reading
Ludlum Micro R m-19 (Exposure rate)	8 μR/hr
Ludlum model 3 w/ 44 – 2 1x1 NaI (gamma)	2.5K to 3K cpm
Ludlum model 18 w/ 44 – 9 GM (beta & gamma)	20 to 40 cpm
Ludlum model 2224 w/ 43-89 (alpha and/or beta)	0 cpm alpha / 349 cpm beta
Eberline ESP - 2 w/ 44 – 9 GM (beta & gamma)	30 cpm
Eberline ESP - 2 w/ 44 – 10 NaI 2x2 scint.	9660 cpm

Table 2: Field Data

Rocketdyne Building T020 concrete blocks							
Block ID	Survey Measurement (gross)			direct measurement (gross)			
	1x1 NaI cpm	Pancake GM cpm	alpha cpm	Wipe ID	alpha cpm	beta cpm	Pancake GM cpm
761	2.5k to 3K	30-100	*	1	1	493	53.5
742	2.5k to 3K	30-70	*	2	0	451	71.9
649	2.5k to 3K	30-110	*	3	4	468	59.3
632	2.5k to 3K	30-140	*	4	2	453	52.2
654	2.5k to 3K	30-70	*	5	2	453	43.5
661	2.5k to 3K	30-110	*	6	2	453	39.5
613	2.5k to 3K	30-80	*	7	2	453	65.2
562	2.5k to 3K	30-110	*	8	5	538	68.5
596	2.5k to 3K	30-90	*	9	0	520	40.1
730	2.5k to 3K	30-100	*	10	3	518	62.7
612	2.5k to 3K	30-100	*	11	5	574	55.2
268-4	2.5k to 3K	90	*	12	3	172	16.7
267-4	2.5k to 3K	60	*	13	1	166	22.6
267-2	2.5k to 3K	20-80	*	14	0	179	24.2
266-2	2.5k to 3K	70	*	N/A			
270B-1	2.5k to 3K	20-60	*	N/A			

* → Performance of alpha survey is not warrented as a result of the review of Rocketdyne's submitted documentation.

N/A → no swipe sample was collected for these blocks.

Table 3: Sanitation and Radiation Laboratory Results.

Block ID	Wipe ID	Laboratory Analysis	Results ± CE ($pCi/100cm^2$)	Results ± CE ($dpm/100cm^2$)
761	1	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
742	2	Gross alpha Gross Beta	0.23 ± 0.17 0.82 ± 0.33	0.51 ± 0.38 1.82 ± 0.73
649	3	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
632	4	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
654	5	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
661	6	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
613	7	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
562	8	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
596	9	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
730	10	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
612	11	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
268-4	12	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
267-4	13	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
267-2	14	Gross alpha Gross Beta	N.D. N.D.	N.D. N.D.
	1 - 14	Gamma Scan	N.D.	N.D.

CE → counting error at the 95% confidence level.
N.D.→ Not Detected

Summary:

The survey results of the representative samples of concrete blocks and steel shield door blocks were all at background levels. The results of the contact measurements and the laboratory analysis of collected samples indicate activity levels below the acceptable surface contamination levels listed in DECON-1 (Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use). I recommend approval of the 244 decontaminated structural concrete sections and 20 steel shield door sections for release to unrestricted use.

Prepared by: Roger K Lyon Date: March 26, 1999